

Trend Study 25C-7-03

Study site name: Cedar Grove.

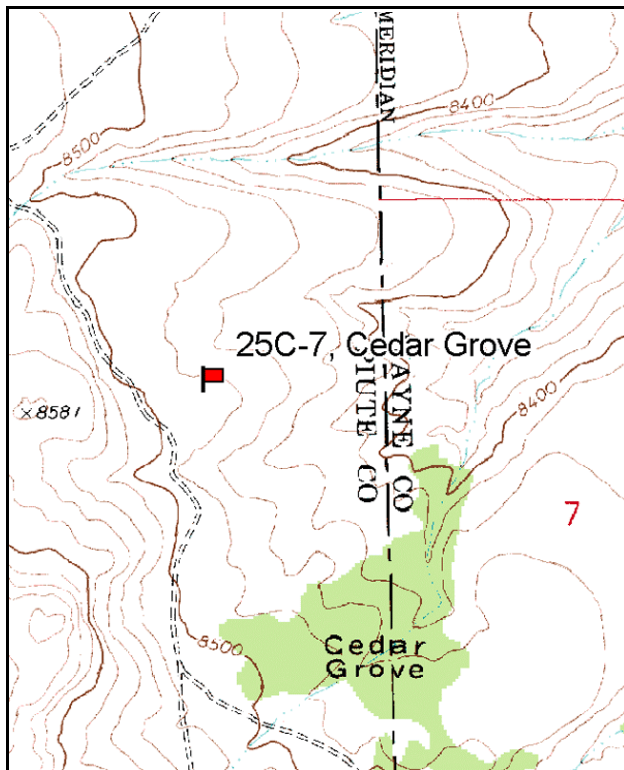
Vegetation type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

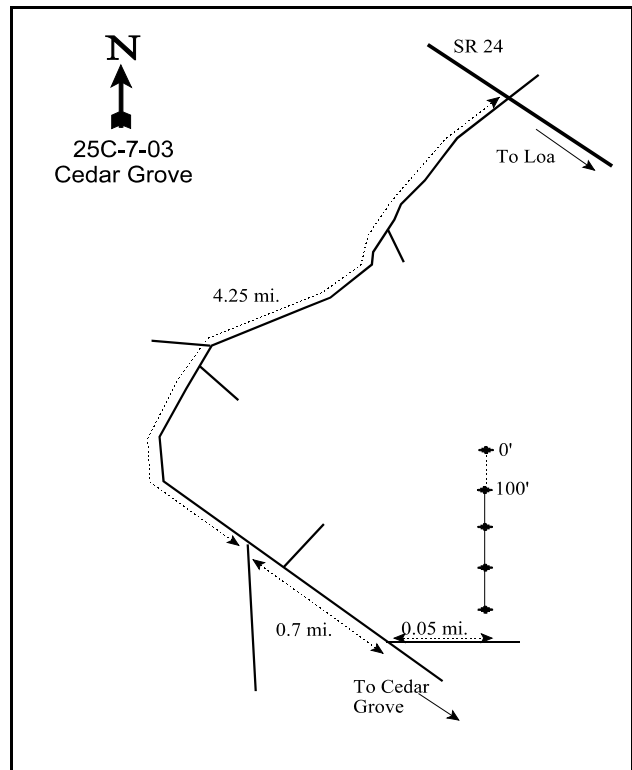
LOCATION DESCRIPTION

Head northwest out of Loa on SR24 for about 11 miles to the summit (marked by a sign, "elevation 8410 ft"). Turn left on a gravel road (Cedar Grove Road) and go 4.25 miles to a fork (West Cedar Grove Road). Turn left and continue 0.75 miles to a faint road to the left. Turn onto this road and go down 0.05 miles (about 55 paces) to a rebar 50 feet to the north of the road. This rebar is tagged #7179 and marks the 400-foot stake. The other stakes are marked by short (1-foot) rebar. The 0-foot baseline stake is 390 feet true north of the 400-foot stake. The 100-foot stake has a red browse tag #7178 attached.



Map Name: Abes Knoll

Township 28S, Range 1W, Section 1



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4249577 N, 425524 E

DISCUSSION

Cedar Grove - Trend Study No. 25C-7

The Cedar Grove trend study is located on the east side of Parker Mountain at an elevation of 8,500 feet on a slight southeast facing slope. The range type is sagebrush-grass. The area is good antelope habitat, and is also used by elk and deer in winter. There is little thermal or escape cover in the immediate area, but a stand of junipers 1/3 mile away provides some cover. The land was managed by the BLM in the past, but is now administered by State Lands and Forestry. Cattle were present in 1985 during study site establishment in mid-June and September of 1991. Sheep may have grazed through the section during the spring in years past. Pellet group data from the site in 1998 estimated 2 deer, 25 elk and 4 cow days use/acre (5 ddu/ha, 62 edu/ha, and 10 cdu/ha). A few antelope pellet groups were also encountered. Rabbit sign was very abundant. Pellet group data from 2003 estimated 8 deer/antelope, 25 elk, and 8 cow days use/acre (20 ddu/ha, 61 edu/ha, and 20 cdu/ha). Most of the deer and elk pellet groups were from winter use and cow use appeared to be from the previous summer ('02).

The soil is very rocky, both above and below the surface. It is fairly shallow with an estimated effective rooting depth of just 8 inches. There is a hardpan at about 7 to 8 inches in depth. This must not be a very restrictive rooting barrier over the whole site due to the presence of mountain big sagebrush mixed in with the black sagebrush. Soil texture is a loam which is slightly acidic in reaction (pH 6.1). Parent material is basalt. Bare soil is exposed in the shrub interspaces as litter is found only under the vegetation. Rock and pavement cover is high accounting for more than 1/3 of the ground cover. Erosion is not a problem due to adequate protective ground cover and the gentle terrain.

The key and dominant browse are black sagebrush and mountain big sagebrush which appear to be hybridizing. The black sagebrush is the most abundant species, numbering around 4,000 plants/acre in 1998 and 2003. Mature plants average 1 foot in height and received moderate to heavy use in 1991 and 1998. Use was mostly light in 2003. Mountain big sagebrush is about one-half as abundant with a density of 2,440 plants/acre in 1998 and 2,780 in 2003. It also has shown moderate to heavy hedging during past readings. Both sagebrush species have fairly high numbers of decadent plants with mountain big sagebrush maintaining a higher level of decadence. Over half of the population was classified as decadent in 2003 and 51% of those were rated as dying (>50% crown death). Black sagebrush is also apparently feeling the effects of several years of drought. Over 1/3 of the population was decadent in 2003 and 56% of those were classified as dying. Other browse species include narrowleaf low rabbitbrush, slenderbush eriogonum, broom snakeweed, bitterbrush, snowberry, and gray horsebrush. These are found in small numbers and do not appear to be increasing.

Grasses on the site do not produce much forage, but mutton bluegrass (*Poa fendleriana*) is very common with a quadrat frequency of 82% in 1998 and 2003. Bottlebrush squirreltail and blue grama are also fairly common and had been grazed by cattle in the past. Forbs are diverse but low in numbers. None are abundant enough to be an important forage source.

1985 APPARENT TREND ASSESSMENT

Soil trend appears relatively stable. Vegetative trend appears stable, but there is potential for the range condition to deteriorate unless the reproduction of big sage improves. Grazing should be closely monitored each year and terminated when livestock begin to take significant and excessive amounts of key browse.

1991 TREND ASSESSMENT

Most basic cover parameters are fairly stable, with a slight increase in bare ground and rock cover, and a

decrease in vegetative cover. Soil trend would be considered stable. The key browse, black sagebrush and Wyoming sagebrush, show increases in population density and in the proportion of heavily hedged plants. Trend for browse would be stable. Trend for herbaceous understory would be slightly upward as 10 of the 20 species indicate upward increases in abundance.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up slightly (4)

1998 TREND ASSESSMENT

Trend for soil is up slightly due to a decline in percent bare ground from 24% to 16%. Rock and pavement cover has also declined from 53% to 33% and litter cover increased slightly. Trend for browse is mixed. Black sagebrush appears to have a stable trend. Density estimates are lower compared to 1991, but some of the difference is due to the larger sample used in 1998. There were only 240 dead plants sampled in 1998 which does not completely account for the nearly 3,000 plants/acre decline in density. Utilization is lighter, vigor improved and percent decadence lower at 16%. Mountain big sagebrush appears to be declining with a 20% decrease since 1991. The number of dead plants (460) appear to support the actual decline in density. Utilization and percent decadence are similar to 1991 levels, but vigor is poor on 15% of the population compared to 2% in 1991. In addition, 27% of the decadent plants sampled were classified as dying. Recruitment is poor and not enough to maintain the population. This is probably a marginal site for mountain big sagebrush. Overall, the browse trend is considered slightly down. Trend for the herbaceous understory is down slightly since the sum of nested frequency of perennial grasses and forbs has declined slightly. Nested frequency of blue grama and bottlebrush squirreltail have decreased significantly while frequency of mutton bluegrass has remained similar.

TREND ASSESSMENT

soil - up slightly (4)

browse - down slightly (2)

herbaceous understory - down slightly (2)

2003 TREND ASSESSMENT

Trend for soil is down slightly. Cover of vegetation and litter have declined slightly while cover of bare ground increased 40%. Erosion is not a problem however due to the level terrain and adequate protective ground cover. Trend for the key browse species, black and mountain big sagebrush, is down slightly. Densities of both species are similar to 1998 estimates but poor vigor has increased and the number of decadent plants has risen. Just over 1/3 of the black sagebrush were classified as decadent and 56% of those were rated as dying (>50% crown death). Recruitment is nonexistent. Mountain big sagebrush has a decadence rate of 53% with 51% classified as dying. Young recruitment is currently poor indicating a possible decline in the future. Trend for the herbaceous understory is down slightly. Sum of nested frequency of perennial grasses has declined slightly with a significant decline in Carex. Mutton bluegrass is still dominant and contributes 88% of the total grass cover. It has remained stable in frequency. Sum of nested frequency of perennial forbs has declined with several species declining significantly. Overall forbs are insignificant and contribute less than 2% cover. The most abundant forbs are low value species.

TREND ASSESSMENT

soil - down slightly (2)

browse - down slightly (2)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Management unit 25C, Study no: 7

Type	Species	Nested Frequency			Average Cover %	
		'91	'98	'03	'98	'03
G	Agropyron smithii	-	1	2	.03	.00
G	Agropyron spicatum	14	5	4	.05	.18
G	Bouteloua gracilis	_b 41	_a 14	_a 15	.28	.52
G	Carex spp.	_A -	_b 31	_a 10	.18	.01
G	Poa fendleriana	213	225	216	9.03	7.77
G	Sitanion hystrix	_b 139	_a 47	_a 35	.44	.32
G	Stipa lettermani	-	-	3	-	.04
Total for Annual Grasses		0	0	0	0	0
Total for Perennial Grasses		407	323	285	10.02	8.85
Total for Grasses		407	323	285	10.02	8.85
F	Antennaria rosea	-	2	1	.00	.00
F	Androsace septentrionalis (a)	-	_b 57	_a 20	.39	.07
F	Arabis demissa	_c 44	_b 11	_a -	.03	-
F	Astragalus convallarius	-	-	1	-	.03
F	Astragalus spp.	_{ab} 8	_b 15	_a 3	.09	.00
F	Calochortus nuttallii	5	-	2	-	.00
F	Chaenactis douglasii	-	3	-	.00	-
F	Cruciferae	-	-	7	-	.01
F	Cryptantha spp.	_b 15	_a 4	_a -	.01	-
F	Cymopterus spp.	4	1	-	.00	-
F	Descurainia pinnata (a)	-	-	3	-	.00
F	Erigeron eatonii	_b 39	_b 33	_a 1	.14	.00
F	Erigeron pumilus	_a 16	_b 28	_a 8	.25	.01
F	Holosteum umbellatum (a)	-	-	2	-	.00
F	Hymenoxys richardsonii	_b 15	_a -	_a -	-	-
F	Lappula occidentalis (a)	-	-	3	-	.00
F	Lomatium triternatum	_c 60	_a -	_b 9	-	.02
F	Lotus utahensis	-	1	-	.00	-
F	Lygodesmia spinosa	22	19	19	.36	.50
F	Microsteris gracilis (a)	-	-	3	-	.03
F	Phlox austromontana	_a 2	_b 20	_{ab} 14	.42	.23
F	Phlox longifolia	_a 13	_b 50	_a 19	.16	.08
F	Polygonum douglasii (a)	-	1	-	.00	-
F	Senecio multilobatus	1	3	-	.01	-

T y p e	Species	Nested Frequency			Average Cover %	
		'91	'98	'03	'98	'03
F	Trifolium spp.	_b 9	_a -	_{ab} 3	.00	.01
Total for Annual Forbs		0	58	31	0.39	0.12
Total for Perennial Forbs		253	190	87	1.50	0.93
Total for Forbs		253	248	118	1.90	1.05

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 25C, Study no: 7

T y p e	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Artemisia nova	81	70	7.40	11.75
B	Artemisia tridentata vaseyana	73	71	7.71	9.65
B	Chrysothamnus viscidiflorus stenophyllus	3	10	-	.07
B	Eriogonum microthecum	8	9	.01	.01
B	Gutierrezia sarothrae	8	7	.04	.00
B	Leptodactylon pungens	0	1	-	-
B	Pediocactus simpsonii	0	3	-	.00
B	Tetradymia canescens	1	0	-	-
Total for Browse		174	171	15.17	21.50

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 7

Species	Percent Cover
	'03
Artemisia nova	13.19
Artemisia tridentata vaseyana	7.36
Eriogonum microthecum	.01

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25C, Study no: 7

Species	Average leader growth (in)
	'03
Artemisia tridentata vaseyana	1.3

BASIC COVER --

Management unit 25C, Study no: 7

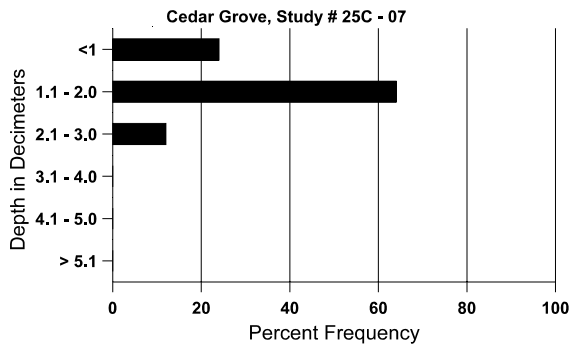
Cover Type	Average Cover %		
	'91	'98	'03
Vegetation	6.25	32.63	28.45
Rock	19.50	9.01	12.55
Pavement	24.50	24.20	23.00
Litter	24.00	27.92	21.27
Cryptogams	2.00	.39	.93
Bare Ground	23.75	16.36	22.84

SOIL ANALYSIS DATA --

Management unit 25C, Study no: 7, Study Name: Cedar Grove

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
7.9	60.0 (9.8)	6.1	48.0	29.4	22.6	2.4	16.9	195.2	0.4

Stoniness Index



PELLET GROUP DATA --

Management unit 25C, Study no: 7

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'03	'98	'03
Rabbit	31	58	-	-
Elk	9	11	25 (62)	25 (61)
Deer/antelope	7	8	2 (5)	8 (20)
Cattle	-	1	4 (10)	8 (20)

BROWSE CHARACTERISTICS --

Management unit 25C, Study no: 7

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Artemisia nova</i>											
91	7066	133	1333	3133	2600	-	42	20	37	16	12/15
98	4120	80	240	3240	640	240	12	12	16	5	12/22
03	4000	-	-	2740	1260	580	6	.50	32	18	12/23
<i>Artemisia tridentata vaseyana</i>											
91	3065	466	733	866	1466	-	33	17	48	2	18/25
98	2440	40	40	1360	1040	460	37	20	43	15	17/26
03	2780	-	40	1260	1480	400	13	4	53	27	20/30
<i>Chrysothamnus viscidiflorus stenophyllus</i>											
91	198	-	66	66	66	-	0	0	33	0	4/4
98	60	-	-	60	-	-	0	0	0	0	8/9
03	440	20	80	360	-	-	0	0	0	0	6/5
<i>Eriogonum microthecum</i>											
91	133	-	-	133	-	-	100	0	-	0	1/3
98	260	-	40	220	-	-	0	0	-	0	6/8
03	280	-	-	280	-	-	50	36	-	0	5/6
<i>Gutierrezia sarothrae</i>											
91	133	66	133	-	-	-	0	0	-	0	-/-
98	220	-	-	220	-	-	0	0	-	0	9/8
03	240	-	60	180	-	-	0	0	-	0	4/5
<i>Leptodactylon pungens</i>											
91	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	-/-
03	20	-	-	20	-	-	0	0	-	0	6/4
<i>Pediocactus simpsonii</i>											
91	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	-/-
03	60	-	-	60	-	-	0	0	-	0	1/1
<i>Purshia tridentata</i>											
91	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	30/89
03	0	-	-	-	-	-	0	0	-	0	-/-

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Symphoricarpos oreophilus</i>											
91	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	19/49
03	0	-	-	-	-	-	0	0	-	0	-/-
<i>Tetradymia canescens</i>											
91	0	-	-	-	-	-	0	0	-	0	-/-
98	20	-	-	20	-	-	100	0	-	0	4/5
03	0	-	-	-	-	-	0	0	-	0	-/-